PATENT
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In re Patent Application of: A. Heinen	)	Conf. No.: 6818
Application No.: 10/619,926	)	Group Art Unit: 3618
Filed: July 15, 2003	)	Examiner: Avery, Bridget D.
FOR: WHEEL PROVIDED WITH DRIVING MEANS	)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Applicant hereby submits the following Appeal Brief in connection with this application.

CERTIFICATE OF MAILING UNDER 37 CFR § 1.8

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Name: Daniel H. Golub Signature: _____ Date January 8, 2007

I. Real Party in Interest

The real party in interest is E-Traction Europe, B.V., the assignee of all right, title and interest in the above-referenced patent application.

II. Related Appeals and Interferences

There are no prior or pending appeals, interferences or judicial proceedings known to appellant, the appellant's legal representative, or the assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. Status of Claims

Claims 1-4, 6-14 and 17-20 stand rejected under 35 USC §103(a) as being unpatentable over Beltrame et al. (US Pat. 5,343,128).

All pending claims (i.e., claims 1-4, 6-14 and 17-20) are being appealed.

IV. Status of Amendments

No amendment has been filed subsequent to the final rejection dated August 24, 2006.

V. Summary of Claimed Subject Matter

Independent claim 1 is directed to a traction assembly that includes a wheel (*see*, e.g., p. 16, lines 9-11; Figs. 1-2, elements 1, 2 and 3) having a rotational axis (*see*, e.g., wheel

shaft 4, described at p. 16, lines 9-15, and shown in Figs. 1-2, element 4), and a first radius extending from the rotational axis to an exterior surface of the wheel (*see*, e.g., p. 16, line 11; p. 16, line 31 - p. 17, line 7; and element "D1" on Fig. 2) . The exterior surface of the wheel engages a static, non-rotating surface while the traction assembly is in operation (*see*, e.g., p. 17, line 24; p. 18, lines 1-8). An electric motor (*see*, e.g., p. 16, lines 13-29, Fig. 2, element 5, p. 18, lines 14-22; p. 20, lines 13-20) directly drives[1] the wheel. The electric motor includes a rotor (*see*, e.g., p. 16, line 17-18, Fig. 2, element 6, p. 20, lines 13-20, and Fig. 3, element 606) situated around the rotational axis at a second radius from the rotational axis, and a stator (*see*, e.g., p. 16, line 20-21, Fig. 2, element 7, p. 20, lines 13-20, and Fig. 3, elements 608, 609) situated around the rotational axis at a third radius from the rotational axis, wherein the second radius is different from the third radius. A gap[2] is situated around the rotational axis between the rotor and the stator. The electric motor, while in operation, exerts torque that fully and automatically drives[3] the wheel, the torque having an arm

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[1] *See*, e.g., page 16, lines 9-10 ("Figure 1 shows a side view of a directly driven wheel according to the invention.")

[2] *See*, e.g., page 17, lines 9-11 of the Specification ("Figure 2 shows a cross-section of a side view of the wheel of Figure 1. The side view shows the air-gap 11 between the permanent magnets 10 and the windings 7.")

[3] *See*, e.g., p. 14, lines 28-30 ("... the wheel strut and wheel according to the invention are particularly suitable for use in fully automatically guided vehicles.") *See also*, Specification at p. 14, lines 23-25 ("[i]t is also possible for instance that a fork-lift truck is equipped with only one or two wheels according to the present invention ...") and p. 18, lines 3-5 ("The tyre may also be designed ... for use in medium speed vehicles such as ... city taxis ....") It is well known that fork-lift trucks and city taxis operate without any application by a human of an assisting force to the wheels of the vehicle.

extending from the rotational axis to a surface of the gap.[4] The traction assembly has a traction ratio, defined as the arm of the torque divided by the first radius, which is larger than 0.57 (*see*, e.g., p. 17, line 5).

VI. Grounds of Rejection to be Reviewed on Appeal

Appellant respectfully requests review on Appeal of the Examiner's rejection of claims 1-4, 6-14 and 17-20, which stand rejected under 35 USC §103(a) as being unpatentable over Beltrame et al. (US Pat. 5,343,128).

[4] *See*, e.g., the embodiment of Figure 2, where the permanent magnets 10 are included with the rotor 6 (see Specification, page 16, lines 17-19) and the arm of the torque is described as half of the inner diameter of the rotor 6 (see Specification, page 17, lines 1-12.) In the example of Figure 2, the inner surface of the rotor 6 corresponds to the "surface of the gap."

VII. Argument

Appellant respectfully requests review on Appeal of the Examiner's rejection of claims 1-4, 6-14 and 17-20 under 35 USC §103(a) as being unpatentable over Beltrame et al. (US Pat. 5,343,128). In response to the Examiner's rejection of the claims, Applicant respectfully asserts that the pending claims are allowable over the cited prior art because the Examiner has failed to establish a *prima facie* case of obviousness. The MPEP states, in relevant part:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. MPEP § 2142.

The Examiner has failed to show that Beltrame et al. teaches all of the elements of claims 1-4, 6-14 and 17-20.

1. Beltrame et al. Fails to Teach an Electric Motor That Fully and Automatically Drives the Wheel

Claim 1 recites that "the electric motor, while in operation, exerts torque that fully and automatically drives the wheel ...," i.e., the electric motor drives the wheel **without** any application by a human of an assisting force to the wheel. By contrast, Beltrame teaches a drive assistance device for a golf buggy, i.e., a device that **requires** application of human force in order to move the vehicle. *See* Beltrame, at col. 1, line 67 – col. 2, line 4 ("Thus, when a golfer initiates movement of the golf buggy in a forward or reverse direction, the attraction and repulsion of the magnets with respect to the electro-magnetic field coil has the combined effect of assisting the drive of the wheel ...") (Emphasis added). It is respectfully

submitted that Beltrame actually teaches away from a traction assembly that "fully and automatically" drives the wheel, as set forth in amended claim 1.

The Examiner has conceded that Beltrame et al. fails to disclose an electric motor that fully and automatically drives the wheel.[5] Nonetheless, the Examiner has asserted – without citation to any authority -- that it would have been obvious "to provide an electric motor that fully and automatically drives a wheel, since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art."[6]

The Examiner's position that it would have been obvious to reconfigure Beltrame et al. for fully automatic drive (i.e., without any application by a human of an assisting force) must fail for at least two reasons. First, one of the intended purposes of the Beltrame design is to create a golf buggy that can be pulled by a person without actuation of the drive device (*see* Beltrame, col. 4, lines 53-59, "... This is important for golf buggies, and other vehicles which are adapted to be pushed or pulled by an operator, since there are many situations in which it is only necessary to push or pull a golf buggy a short distance and in these situations it may be preferred by a golfer to simply push or pull the golf buggy rather than actuate the drive device.") Since functionality permitting the user to manually push or pull the buggy by hand would be completely lost if Beltrame was reconfigured for fully automatic drive, it is clear that it would not have been obvious to modify Beltrame et al. for fully automatic drive, as argued by the Examiner. *See* MPEP, Section 2143.01(V) ("If the proposed modification

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[5] Official Action dated August 24, 2006, at 3.

[6] Official Action dated August 24, 2006, at 3.

would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.")

Second, Beltrame et al. states that it is limited to vehicles "such as golf buggies, trolleys and parcel carriers, which are adapted to be pushed or pulled by an operator in a forward or a reverse direction." Beltrame et al., col. 3, lines 15-18. Since the device of Beltrame et al. clearly contemplates assistance from the operator in moving the vehicle from a standing position, it is completely unclear whether the drive system of Beltrame et al. would be able to produce sufficient force on its own to initiate movement of the vehicle from a standing position. The absence of any disclosure in Beltrame et al. stating that its drive system is capable on its own of initiating movement of the vehicle from a standing position suggests that a substantial redesign of the Beltrame et al. drive system might be required in order to produce the required force. Again, the possibility of such a required redesign weighs against a finding of obviousness in this case. *See In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.")

2. Beltrame et al. Fails To Teach A Traction Ratio, Defined As The Arm Of The Torque Divided by the First Radius, Which Is Larger Than 0.57

Independent claim 1 also recites that "the traction assembly has a traction ratio, defined as the arm of the torque divided by the first radius, which is larger than 0.57." The Examiner has acknowledged that this aspect of the claims is not present in Beltrame. Nonetheless, the Examiner maintains that it would have been obvious to provide a traction

ratio that is larger than 0.57 "since it has been held that discovering an optimum value of an effective variable involves only routine skill in the art."[7] In support of this position, the Examiner has asserted the following:

> Steig et al. (4,534,748) provides evidence that drive tension and slip can be modified for all ranges of torque according to the traction ratio. It is noted that Stieg et al. teaches a traction ratio below 0.65 and a traction ratio of about 0.85. The traction ratio will determine tension and slip before any determination of the optimum or workable ranges (i.e., a traction ratio that is larger than 0.57). Official Action dated August 24, 2006, at 3-4.

Significantly, Steig fails to teach a traction ratio defined as the arm of the torque divided by the first radius, which is larger than 0.57, as required by claim 1. The Examiner admitted this deficiency in Steig et al. during the Interview conducted in this matter on June 8, 2005.[8] In the August 24, 2006 final rejection, the Examiner has failed to cite any passage from Steig et al. that teaches a traction ratio defined as the arm of the torque divided by the first radius, which is larger than 0.57. Nor has the Examiner articulated any basis why it would have been obvious to combine Beltrame et al and Steig et al.

Section 2144.05(II)(B) of the Manual of Patent Examining Procedure (MPEP) governs whether optimization of result-effective variables can be considered a matter of routine skill, and provides as follows:

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[7] Official Action dated August 24, 2006, at 3.

[8] See Interview Summary, dated June 8, 2005 indicating that "agreement was reached" with the Examiner on the following: "Applicant argued that Atieg et al. lack the teaching of a 'traction ratio being the arm of tourque divided by a radius of the wheel.' Steig et al. actually teaches a traction ratio based on belt tension (drive pulley)." In the next official dated December 15, 2005, the Examiner dropped Steig as a basis for rejecting the application.

> A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). ... "(Emphasis added)

In the present case, the Examiner has failed to show that Applicant's claimed traction ratio (i.e., (defined as a ratio of the arm of the torque divided by a radius that extends to the exterior surface of the wheel)) was recognized in the prior art as a result-effective variable. In the decision cited in the MPEP (i.e., *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)), the Court reversed the Examiner's obviousness rejection on the ground that the claims were directed a parameter that had not previously been recognized as a result-effective variable. Like the claims at issue in *In re Antonie*, Applicant's claims are directed to a parameter (i.e., Applicant's claimed traction ratio) that has not previously been recognized as a result-effective variable. For this further reason, the Examiner's rejection of the claims cannot stand.

In summary, it is clear that Beltrame et al. fails to teach the wheel as presently claimed. Applicant therefore respectfully requests reversal of the Examiner rejection of claims 1-4, 6-14 and 17-20 as being unpatentable over Beltrame et al.

VIII. Claims Appendix

1. (Previously presented) A traction assembly comprising:

a wheel having a rotational axis, and a first radius extending from the rotational axis to an exterior surface of the wheel, wherein the exterior surface of the wheel engages a static, non-rotating surface while the traction assembly is in operation;

an electric motor that directly drives the wheel, wherein the electric motor includes a rotor situated around the rotational axis at a second radius from the rotational axis, and a stator situated around the rotational axis at a third radius from the rotational axis, wherein the second radius is different from the third radius;

a gap situated around the rotational axis between the rotor and the stator;

wherein the electric motor, while in operation, exerts torque that fully and automatically drives the wheel, the torque having an arm extending from the rotational axis to a surface of the gap; and

wherein the traction assembly has a traction ratio, defined as the arm of the torque divided by the first radius, which is larger than 0.57.

2. (Original) The traction assembly according to claim 1, wherein the traction ratio is larger than 0.65.

3. (Original) The traction assembly according to claim 2, wherein the traction ratio is larger than 0.7.

4. (Original) The traction assembly according to claim 3, wherein the traction ratio is smaller than 1.0.

5. (Cancelled)

6. (Previously presented) The traction assembly according to claim 1, wherein the electric motor is a synchronous motor provided with permanent magnets.

7. (Previously presented) The traction assembly according to claim 6, wherein the stator is provided with the windings which with respect to a vehicle are statically arranged in the vehicle and the rotor is provided with permanent magnets.

8. (Original) The traction assembly according to claim 7, comprising operating and control means for the operation of the electric motor within the stator.

9. (Original) The traction assembly according to claim 8, wherein the rotor is arranged coaxially with the stator and connected to a drive shaft of the electric motor.

10. (Previously presented) The traction assembly according to claim 1, wherein the electric motor is mounted adjacent to the wheel.

11. (Previously presented) The traction assembly according to claim 1, wherein the electric motor includes a drive shaft, and the drive shaft and a wheel shaft are situated in axial alignment along the rotational axis, in each other's extension.

12. (Previously presented) The traction assembly of claim 1, wherein the electric motor includes a drive shaft, wherein the drive shaft directly drives a wheel shaft.

13. (Original) The traction assembly according to claim 12, wherein the drive shaft is the wheel shaft.

14. (Original) The traction assembly according to claim 7, wherein the permanent magnets are connected to the wheel shaft.

15.-16. (Cancelled)

17. (Previously presented) The traction assembly according to claim 1, wherein the electric motor is situated inside the wheel.

18. (Previously presented) The traction assembly according to claim 1, wherein the wheel further comprises a tire, and the exterior surface of the wheel corresponds to an exterior surface of the tire.

19. (Previously presented) The traction assembly of claim 1, wherein the static, non-rotating surface is a road surface.

20. (Previously presented) The traction assembly of claim 1, wherein the arm of the torque extends from the rotational axis to an inner diameter of the rotor.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

None.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Director is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,
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